CANRON NEWS

June 1978

A stainless steel story

Canron's Foundry Division has for many years been a leader in the design and production of wear resistant alloy iron castings for the steel and mining industries, among others. In the past few years, the Division has successfully entered a new market — one that demands slightly different technology and production techniques.

The new product is the stainless steel heat resistant casting: different because the metal is steel rather than iron, and because it can withstand extreme variations in temperature.

The casting's first major application was in the hearth used for pelletizing iron ore.

Briefly, pelletizing came about because of the unavailability of high grade ore (50 to 60 per cent iron) to the steel industry. Lower grade ores (30 to 35 per cent) are now used. But before it is acceptable to the blast furnace, the ore must be crushed and non-iron-bearing material must be taken out.

By then a concentrated powder, the ore is consolidated and fired. The result is an approximately ½ inch diameter pellet ready to charge in the steelmaker's blast furnace.

Grey iron was once used for pelletizing hearth castings, but because of the intense heating and cooling involved in the pelletizing process, the life of these castings was limited. At high temperatures, grey iron would oxidize, become brittle and break.

Stainless steel castings, on the other hand, will perform well in temperatures up to 2,000 degrees F., or 1,090 degrees Celsius. They will also withstand impact met in the pelletizing process. Foundry Division's castings are made of HH type heat resistant steel, which contains 25 per cent chromium and 12 per cent nickel.

Canron has sold grate castings for a moving-grate type hearth designed and manufactured by Allis-Chalmers Canada Limited. The grates are attached to a propelling mechanism to form a moving hearth resembling a continuous belt. When they pass through the firing zone, hot gasses are sucked through holes in the grates. In this way, the iron powder is fired and fused.

After the pellets are heated they move to a cooling zone, and finally drop off the hearth. As with the familiar conveyor belt, the grates return to the starting point and the process begins again.

"These grate castings have to be held firmly on the propelling mechanism", said Fred Payne, sales manager — alloy foundry products, "yet they must be flexible enough to negotiate the hairpin return at the end of the process".

According to reports, the stainless steel castings are performing well under these extreme conditions. Other castings supplied are: rollers to drive the continuous hearth and side guards to keep pellets from falling off. The upper portion of the guards is made of heat resistant stainless steel; the lower half is made of ductile iron with a high silicon content.

Canron has an agreement to supply Allis-Chalmers with heat-resistant castings in Canada.

The moving grate hearth is being supplied by Allis-Chalmers to Iron Ore Company of Canada, Limited, for use at their plant at Sept Isles, Quebec. Other users are the Electric Reduction Co. in Newfoundland, and Sherman Mines is Ontario.

Another type of pelletizing machine application features pallets fitted with straight bar castings which support the pellets. The entire pallet moves along a conveyor through the firing area. This design is marketed by Dravo in the United States and by Lurgi in Germany.

Another application for the heat resistant castings is quite different in scope. For some time, Foundry has supplied stainless steel grate castings for use in garbage incinerators operated by the city of Montreal. The incinerators are a Vonroll design, for which Dominion Bridge is the Canadian licensee. Montreal operates three units at their incinerator plant.

Central to Allis-Chalmers Canada's moving grate hearth are stainless steel grate castings (above).

The process is a simple cascade type. Garbage is loaded at the top of the incinerator, which is about 100 feet in height. The force of gravity causes the garbage to work its way down through several stages of grates, which move backward and forward in a sifting action. At the final stages, all combustible material is burned. Metal cans and other similar objects are trucked away, compacted and recycled. Generated heat is also used to produce steam, which is used to heat surrounding buildings.

Several hundred grates are contained in one incinerator. Since operating temperatures are high, heat resistant castings must be installed.

Other potential uses for stainless steel castings are cooling grates and kiln parts for the cement industry, sewage sludge incinerators and quenching baskets and a variety of parts used in the heat-treating of steel.

Our cover shows one of several stainless steel grates installed in an incinerator at Ash Bridges Bay filtration plant in Toronto. The incinerator turns sludge into hard, reddish crystals.

Ductile iron pipe is pushed through an annealing furnace by stainless steel "fingers" shown in the center of the photograph on the opposite page.

The C-330 does the job quickly

The first of Canron Railgroup's high production undercutter — ballast cleaner machines to be used on the North American continent got its start during the late summer months of 1977 on Canadian National Railways.

The C-330 Ballast Cleaner initially operated at Kamloops, B.C., and later moved to an area west of Edmonton. Working on one of CN's main lines, the C-330 had to be able to get in and do the job quickly.

The 95-foot long machine can operate at a linear rate of about 1,200 feet (365 meters) an hour. In the same amount of time, it can clean about 785 cubic yards (600 cubic meters) of ballast.

A new ballast distribution system spreads the material evenly, eliminating further manual or mechanical regulation. The ballast is immediately ready for tamping.

Rapid coupling and uncoupling of the C-330's excavating chain cuts downtime to a scant five minutes when obstacles like bridges or switches are reached.

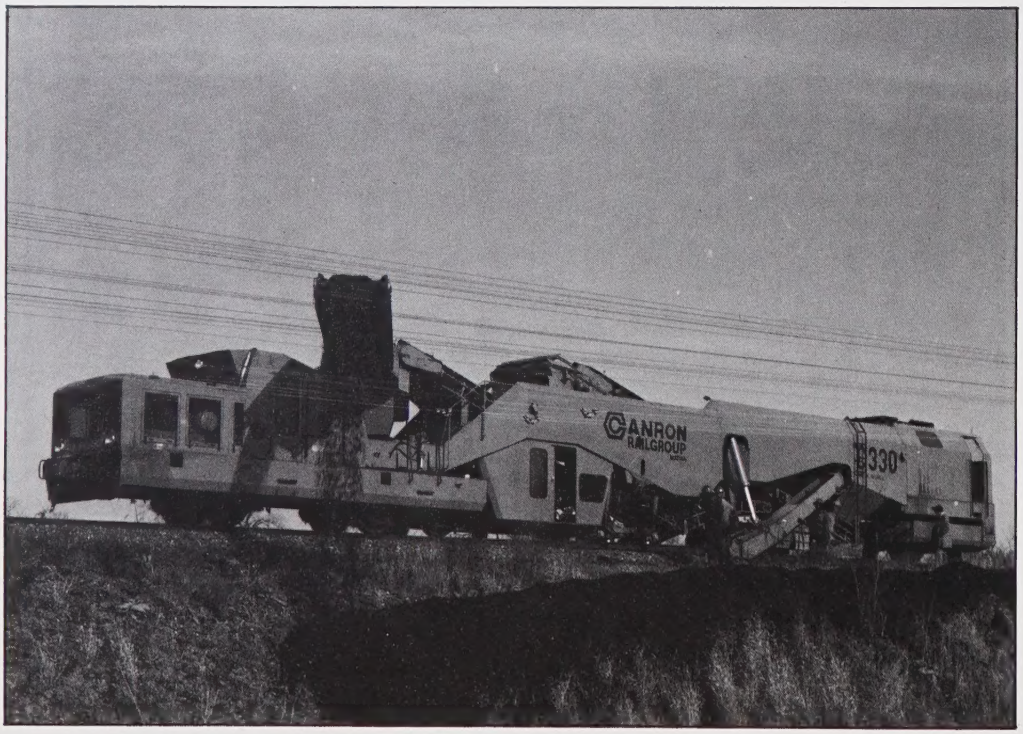
A large capacity screening system handles all stone sizes rapidly. With a total surface area of 27 square meters, efficient screening of even the most irregular and polluted ballast is guaranteed.

A sophisticated cant compensation system allows the machine to be maintained horizontally even when operating on sharp curves.

Comfort and control

The main operator of the machine sits in a cabin suspended from the chassis of the machine, between the front and rear cars. The cabin has large windows, is soundproofed and is comfortably equipped. The operator faces the rear of the machine, in full view of the excavating chain. Two other auxiliary personnel flank the excavating chain, checking the depth and width of cut and removing deteriorated ties.

The C-330 high production ballast cleaner/undercutter (below) can operate at a rate of about 1,200 feet an hour.



The excavating unit can be seen as a diagonal trough near the rear of the unit. One of these is located on each side of the train. The continuous manganese steel chain travels down one trough, cuts through the ballast and goes up the other trough, carrying fouled ballast with it. Width of excavation can vary from 11 to 16 feet; depth, from 12 to 27 inches. Moreover, these adjustments can be made while the machine is moving, to meet working requirements.

The chain dumps the fouled ballast into a hopper, which relays it to the main conveyor. The material is taken to the vibrating screen unit which separates the spoil from the ballast. Large stones are allowed to bypass the screening unit.

At this stage, three possibilities exist. Spoil can be transferred to a ballast car for later disposal, or it can be conveyed from the machine to the track shoulder. Thirdly, fouled ballast may bypass the screening unit for complete evacuation.

(Canadian National chose the latter operation. This left the track bed ready to receive new and larger ballast which was installed in a later operation.)

Cleaned ballast is then transferred to the distribution hopper, which allows it to flow evenly through winged gates to the road bed below. A plow on the outer side of each rail smoothes the ballast into the proper profile.

A distinct advantage of the distribution system is that it cuts off ballast flow if the machine stops forward motion. Ballast is retained in the distribution hopper, thus avoiding risk of pile-ups. However, the machine continues screening operations even when the machine is stopped.

Pacific introduces the OBS

The metal stamping industry can be a highly competitive one, where the edge goes to the manufacturer with the right equipment on the most efficient line. Manufacturers expect machinery to be reliable and adaptable to a variety of line operations, to perform accurately within close tolerances, and with little waste.

To meet these needs, Pacific Press & Shear has developed a first-of-its-kind hydraulic Pressformer to compete with the conventional, mechanically geared OBI presses. It is called the OBS-Series Pressformer (Open Back Stationary), and it features an impressive array of design innovations.

Most importantly, the OBS is hydraulically powered, providing greater control and versatility, with pressing speeds that equal or surpass those of the mechanically geared presses.

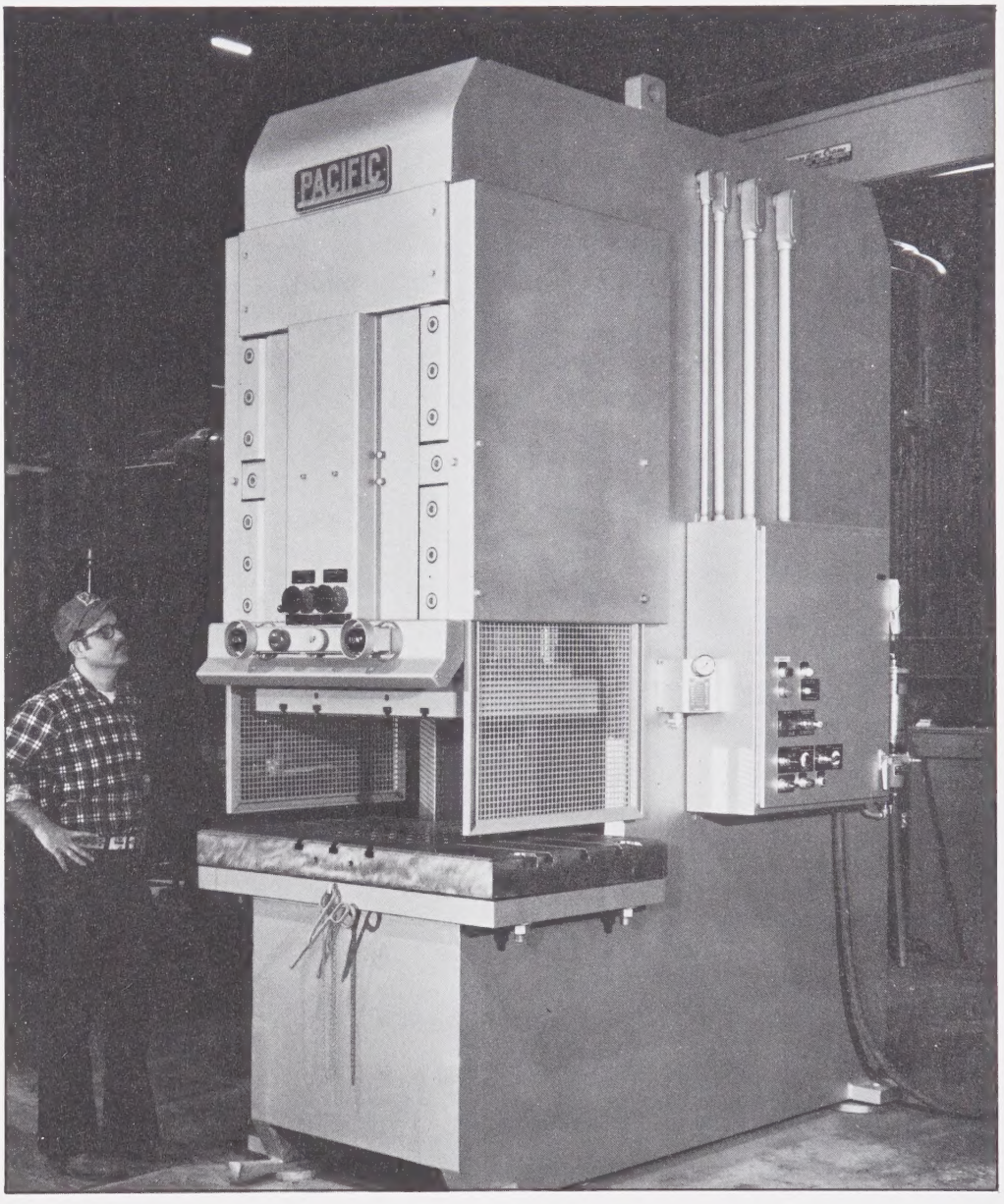
The OBS hydraulic system allows the operator to adjust the tonnage of pressure between 20 and 100 per cent of the rated press capacity. This means that the pressure applied to the material being formed can be adjusted, thus protecting dies not designed to withstand the full press tonnage.

The length of the slide's stroke can also be adjusted by means of digital readouts at the operator's station to allow short, high-speed operations. Press speed combinations can also be adjusted for any portion of the stroke. These precise, hydraulic controls allow the OBS to be easily adapted to a variety of materials and operating conditions.

The OBS is ideally suited for punching, blanking, perforating, coining, forming, bending, assembly work, deep drawing or any work involving the production of large quantities of uniform parts.

With simple controls and fast set-up capability, the OBS makes short run applications economically feasible, and it is equally adaptable to continuous automated feeding systems.

A unique and innovative concept is the large hydraulic cylinder which moves with the slide throughout the stroke range. The cylinder is inverted and mounted within the slide, enabling a hydraulic knock-out to be incorporated at the lower extremity of the cylinder. This knock-out system can be easily pre-adjusted or by-passed.



The machine's impressive accuracy is largely due to a long, 8-point, square-type gibbing system (guiding system) which gives the slide better support, alignment and smooth operation at high stroking speeds. This is the most positive type of gibbing for this kind of operation, and is usually found only on larger presses. Gibbing adjustments can be easily made from the front of the press.

The OBS has a heavy steel frame that is rigid and resistant to deflection, and the bed has been designed to accomodate dies of varying sizes for a variety of stamping applications.

Other standard features include keyed mode selection, automatic decompression, non-overload system, 10 micron oil filtration, two-hand control, tonnage control and an automatic centralized slide lubrication system.

Available in 110, 150 and 250 ton capacities, the OBS-Series Pressformer is manufactured at Pacific's Mt. Carmel, Illinois plant.

A pulp mill for Poland

On the shore of the Baltic Sea, bounded on the east by the USSR and on the south by Czechoslovakia, lies Poland. It is generally a country of lowlands, generously endowed with forests of the same type found throughout southern Quebec. Poland is well known for its fine vodka and sausages, but few recall that it is now ranked tenth among the world's largest industrial powers.

Mining and agricultural products have played an important role in Poland's industrial development, but other sectors are improving as well. The country's pulp and paper industry, for example, has progressed to the point where the Polish government plans to market these products worldwide. An important focus in this industry is an international scale mill now under construction in Kwidzyn, Poland.

Heading up the operation and construction for the mill is Polymex-Cekop, a division of the Polish government, and Zaklady Celulozowo-Papiernieze, mill owner. Polymex-Cekop looked throughout the world for expertise to build the Kwidzyn mill. Project engineers are H.A. Simons Limited of Vancouver, a firm known worldwide for its experience in designing pulp and paper complexes.

Simons selected Canron to supply structural steel for the two main operating areas of the project. Phase one is the pulping group, containing most of the paper and pulp-making machinery. It accounts for about 4,300 tons (3,900 metric tons) of structural steel. The power group is the second phase, containing boiler units and similar equipment. It accounts for about 4,200 tons (3,800 metric tons). The value of both contracts is approximately $7.3 million. The project is funded in part through a loan by Canada's Export Development Corporation.

Through its plant in Montreal, Canron's Eastern Structural Division supplied all fabricated structural steel and some specialized equipment needed for erection.

The fabrication was done for the pulping group members, which will have to support extremely heavy machines involved in the production of paper. A typical column weighs in at about 300 pounds per lineal foot, measures 36 inches from flange to flange and was fabricated from plates of 1-¼ to 1-½ inch thickness.

The buildings are being erected by construction agencies of the Polish government. Representatives of the Polish erection agencies visited Canada and spent time in Canron's Toronto and Montreal plants. Visits to various job sites were also arranged to permit the representatives to view Canadian erection procedures and to familiarize themselves with erection equipment.

The pulping building was designed in Canada by H.A. Simons. The power group was designed in Poland under the supervision of Simons to assure compatability with North American standards.

The completed pulping building will support three floors including the ground level. Reinforced concrete slabs from five to eight inches thick were designed to carry the weight of the heavy pulping machinery. Ground floor area will be about 120,000 square feet for the pulping building; 100,000 square feet for the power group.

Steel members were covered with two coats of protective paint in Canron's Montreal shop: a zinc-rich primer and an epoxy top coat. They were then shipped and touched up in the field by the Polish erection crew.

Once the structural steel was delivered to the Montreal docks, the Polish government completed transport on its own ships. All steelwork was unloaded at Gdànsk, on the Baltic sea, and sent on barges up the Vistula river to Kwidzyn.

Erection of the steelwork was completed in early 1978.

Canron's Project Manager, Andrew Easton, who visited Poland on various occasions during the contract, commented:

"The job went extremely well. We developed an excellent relationship with the various Polish authorities and look forward to our next project in Poland."

As might be expected of a pulp and paper town, Kwidzyn lies in a sparsely populated area, surrounded by forests. It is about 180 miles north of Warsaw.

Although the Kwidzyn project was a first for Eastern Structural in Poland, the Division has had extensive experience in similar projects throughout the world, as well as in Canada.

The superstructure of the Kwidzyn plant's pulping group (on opposite page) is composed of heavy steel members capable of supporting large papermaking machinery.

Canron and the arts

Sculpture may seem like an abrupt departure from the fabrication and erection of massive superstructures for buildings or bridges. But when F.B.M. Distillery Ltd., Canadian producers of Bacardi Rum, wanted a steel sculpture, Canron engineers accepted the challenge.

Actually, Canron's Eastern Structural Division had supplied and erected structural steel for F.B.M.'s three-storey headquarters in Bramalea, Ontario. The sculpture was added to enhance the main entrance of the building.

The sculpture symbolizes the Bacardi Bat, which appears on the company's bottling label. Designed as a three-pinned arch made from stiffened plates, the bat has a height of about 25 feet, a depth of 12 feet and a wingspan of 45 feet. It weighs about 35 tons. Situated between the bat's legs are the doors of the main entrance.

One interesting construction detail: the sculpture arrived on site in two pieces, which were later connected at the top by three short beam members.

The Division has also supplied structural steel to the parent company, Bacardi International, Ltd., for their head office expansion in Hamilton, Bermuda. Total value of both construction contracts was about $400,000.

The bat was not the Division's only contribution to the arts. Another sculpture, designed by Canadian artist Kosso Eloul was produced by Eastern Structural for the Hamilton, Ontario, Art Gallery.

Standing approximately 25 feet high, the sculpture is composed of two boxes, each four by four by sixteen feet. The ten ton piece looks something like a large capital T with its cross-bar balanced precariously on the upright. It was eventually christened Canadac.

The main entrance of F.B.M.'s headquarters in Bramalea, Ontario is formed by a sculptural representation of the Bacardi Bat. Eastern Structural's erection crew is shown (above) putting the sculpture in place.

CANRON INC.

Divisions: Eastern Structural, Foundry, Mechanical, Pipe, Plastics, Railgroup, Western Bridge.

Subsidiaries:

Canada: Canrep Inc., Canron Atlantic Limited.

U.S.A.: Pacific Press & Shear Company, Star Iron & Steel, Tamper

Switzerland: Matisa Matériel Industriel S.A.

Australia: Tamper (Australia) Pty., Limited

1 PLACE VILLE MARIE, MONTREAL
QUE. H3B 2A8